

**REMARKS**

Claims 1, 4-14 and 16-36 remain pending, with only Claim 1 being independent.

Claims 1, 6, 7, 9 and 23 have been amended. More specifically, Claims 6, 7 and 9 have been amended to place the claims in proper Markush format. Claim 1 has been amended to include component (e), polymethyl methacrylate. Claim 23 has been amended to indicate that the composition used to assemble the article has been cured.

**Applicants' Response**  
**to the 35 U.S.C. § 112 Rejections**

Claim 23 stands rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for the reasons are set forth at pages 4-5 of the Action.

Applicants have introduced an amendment to that claim to recite that the composition used to assemble the article has been cured.

Accordingly, the Section 112, second paragraph, rejection should no longer be maintained, and reconsideration and withdrawal thereof are respectfully requested.

**Applicants' Response  
to the 35 U.S.C § 102/103 Rejections**

The Office Action has continued to reject Claims 1, 4-7, 11-14, 16-22, 26-34 and 36 under 35 U.S.C. § 103(a) as being allegedly obvious over the '180 patent or the EP '721 publication (pages 5-8), and under Section 103(a) as being allegedly obvious over the EP '721 publication, in view of the '944 patent and further in view of the '432 patent (page 8). The Office Action further continues to reject Claims 23-26 and 30-32 under Section 103(a) as being allegedly obvious over the '180 patent or the EP '721 publication, in view of the '944 patent and further in view of Coover (pages 8-9).

Applicants traverse these rejections.

The invention as presently claimed is directed to broadly a composition comprising: a 2-cyanoacrylate monomer; a metallocene component; a photoinitiator component other than the metallocene component; certain sulfur-containing compounds and polymethyl methacrylate.

The Action cites a number of different documents against the pending claims, the primary ones being the U.S. '180 patent or the EP '721 patent publication (collectively, Mikune).

Mikune as the Examiner knows is directed to the use of a photocurable cyanoacrylate composition, which includes a

cyanoacrylate in combination with a metallocene based on a group VIII metal and a cleavage type photoinitiator.

Nowhere in Mikune is it disclosed, taught or suggested that the sulfur containing compounds that Applicants have recited in Claim 1, could be used, or would be desirable for use, therein, let alone that inclusion of such sulfur containing compounds could improve the physical properties thereof. Moreover, nowhere in Mikune is it disclosed, taught or suggested to add polymethyl methacrylate, let alone that inclusion of polymethyl methacrylate could improve the physical properties thereof, such as shelf life stability, as Applicants have shown through the Attarwala Declaration.

As such, Mikune provides no motivation for persons of ordinary skill in the art to look to another source for either such sulfur containing compounds or polymethyl methacrylate (or both).

Attarwala continues to be used as secondary reference to support the obviousness formula.

Attarwala is directed to cyanoacrylate monomer adhesive formulations with improved thermal resistance in the cured state. The improved thermal resistance of Attarwala is achieved through the addition of sulfur containing compounds. In contrast to the conclusion reached at page 2 of the Action

(emphasis added):

A person of ordinary skill in the art would have been motivated by a reasonable expectation of success in obtaining this advantage in the compositions disclosed by Mikune et al because cured cyanoacrylate polymers would be expected to be equivalent whether cured thermally, as taught by Attarwala et al, or by irradiation, as taught by Mikune et al,

Attarwala does not speak to the cure of cyanoacrylates by thermal methods.

Attarwala does not expressly disclose, teach or suggest:

-- the ability of the thermally resistant cyanoacrylate adhesive formulations to be curable by exposure to radiation in the electromagnetic spectrum;

-- the addition of a metallocene component; or

-- the addition of a photoinitiator other than the metallocene, or

that it would be desirable for Attarwala's thermally resistant cyanoacrylate compositions to be photocurable, to include a metallocene (for any reason), or to include a photoinitiator.

In addition, Attarwala does not expressly disclose, teach or suggest that the addition of a sulfur containing compound would lead to an improvement in shelf life stability, and thus there would be no reasonable expectation

of achieving success in reaching that improvement in a photocurable cyanoacrylate composition.

Moreover, nowhere in Attarwala is it expressly disclosed to add polymethyl methacrylate to a cyanoacrylate with either a metallocene component or a photoinitiator (much less both), let alone that inclusion of polymethyl methacrylate could improve the physical properties thereof, such as shelf life stability, as Applicants have shown through the Attarwala Declaration.

In order to render obvious the invention as presently claimed based on the cited documents of record, the Action must provide in properly combinable documents:

A composition with

- a cyanoacrylate
- a metallocene
- a photoinitiator
- one or more sulfur-containing compounds

selected from sulfonates, sulfinites, sulfates, and sulfites

- polymethyl methacrylates

Simply put, neither Mikune nor Attarwala disclose these components in the manner claimed in the subject application, nor do they provide motivation to combine the teachings of the two documents at the time the present invention was made, let alone for the purpose of improving

shelf life stability.

Claim rejections cannot be predicated on the mere identification in the documents of record of individual components of the recitations in the claimed combination; rather, particular findings must be made as to why the skilled artisan, with no knowledge of the claimed invention, would have selected the specific components for combination in the manner claimed. In re Kotzab, 55 USPQ2d 1313, 1318 (Fed. Cir. 2000).

Even if some disclosure, teaching or suggestion was present, which premise Applicants dispute, there would be no reasonable expectation of success from the cited documents of record themselves to reach the inventive combination as presently claimed.

As noted previously in Applicants March 26, 2003 Amendment, the inventive photocurable cyanoacrylate composition is a sensitive system, even more so than a conventional cyanoacrylate composition, in that the addition of agents to perform certain functions may have adverse effects on the stability, for instance, which may be dramatic. Thus, one would not have looked to add to a cyanoacrylate, first a combination of the metallocene/photoinitiator package to render the composition photocurable and next a sulfur containing compound, absent

some express suggestion to do so. Moreover, Applicants' amendment to Claim 1, which introduces polymethyl methacrylate as an additional component, provides express nexus to the unexpected results (which the Examiner acknowledges at page 3 of the Action).

One of ordinary skill in the art would not have thought to combine the teachings of the cited documents at the time the invention was made, unless given reason to do so, such as by reference to the present Specification which provides that guidance. However, that approach would require impermissible hindsight.

Thus, one could only have drawn the conclusion that the combination of Mikune and Attarwala, assuming only for the sake of argument that such combination is proper, renders the claims obvious based on a hindsight reconstruction of the invention as claimed, using Applicants' Specification itself as a tool to weave together the obviousness conclusion.

Applicants' study of the affect of the addition of ethylene sulfite (one of the expressly recited sulfur containing compounds) on ethyl-2-cyanoacrylate and on a photocurable cyanoacrylate composition comprising ethyl-2-cyanoacrylate in combination with ferrocene as a metallocene and "IRGACURE" 819 [bis(2,4,6-trimethyl benzoyl) phenyl phosphine oxide] as a photoinitiator with polymethyl

methacrylate shows significantly improved shelf life stability (measured as a function of the increase of viscosity at room temperature over time).

As noted previously in the Attarwala Declaration and Applicants' March 26, 2003 Amendment, Applicants do not concede that a case of *prima facie* obviousness has been established in the Action. Nevertheless, the information provided above in the Attarwala Declaration, together with the claim amendments introduced herein, provide unexpected results sufficiently to rebut any such case.

The Action also uses Gatechair as a tertiary reference in combination with Mikune and Attarwala.

Gatechair, as described in the Specification, speaks to a free radical polymerizable composition which includes (a) polymerizable partial esters of epoxy resins and acrylic and/or methacrylic, and partial esters of polyols and acrylic acid and/or methacrylic acid, and (b) a photoinitiator blend of a cyclopentadienyl iron complex and a sensitizer or photoinitiator, such as an acetophenone.

Gatechair adds nothing to the obviousness formula advanced in the Action.

While one of the chemicals to which Gatechair refers is in part an acrylate, cyanoacrylates which are used in the inventive compositions herein, have quite disparate

properties and have developed as separate class of chemicals, particularly in the adhesives industry. Thus, the acrylate- and epoxy-containing compositions of Gatechair are not the cyanoacrylates used by Applicants. Therefore, whether Gatechair's photoinitiator is substitutable for the photoinitiator disclosed in Mikune is irrelevant. Also, for the sake of discussion, while motivation to combine the disclosure of these patent documents may exist in the context of acrylate chemistry, such motivation does not exist in the context of cyanoacrylate chemistry, as neither Mikune nor Gatechair indicates that the chemistries are interchangeable. Accordingly, no suggestion or motivation exists to combine Gatechair with Mikune or Attarwala.

Moreover, Gatechair discloses, as the Action points out, cationically polymerizable materials. Mikune specifies curing by an anionic mechanism (see the EP '721 patent publication, page 24, lines 6-9). There is thus no motivation given in either Mikune or Gatechair to look to the other for curing by the mode disclosed by the other.

In addition, Gatechair's reference to ferrocenium salts is misplaced, as such ferrocenium salts are well-known cationic photoinitiators; they are not however the metallocenes set forth in the subject application. The ferrocenium salts of Gatechair are themselves electron-

deficient and not comparable to the metallocenes set forth in the subject application, such as ferrocene, which is a neutral, non-salt compound.

Further, photoinitiated anionic polymerization requires photogeneration of a nucleophilic, electron-rich initiating species, whereas cationic species, such as Gatechair's ferrocenium salts, are known to retard, if not prevent, polymerization of cyanoacrylates.

Mikune (in the '180 patent) discloses the use of metal complexes, which release a nucleophilic agent (see abstract and col. 3, lines 31-32). Accordingly, one of ordinary skill would not be motivated to combine the teachings of Mikune with those of Gatechair on the use of ferrocenium salts, which are known to release electrophilic agents on exposure to radiation in the electromagnetic spectrum. In this sense, Gatechair teaches away from Mikune (thus, no motivation to combine), as it does from the invention as claimed.

Accordingly, no suggestion or motivation exists to combine Gatechair with Mikune or for that matter Attarwala.

Lastly, Coover is used as a tertiary reference against Claims 23-25 and 30-32. Coover, also as described in the Specification, relates to cyanoacrylates generally, in which they are described as quick-setting materials which

cure to clear, hard glassy resins, useful as sealants, coatings, and particularly adhesives for bonding together a variety of substrates.

Coover does not teach or suggest the ability of curing cyanoacrylates through exposure to radiation in the electromagnetic spectrum, let alone the addition of a particular sulfur containing compound to achieve any desired effect.

**Double Patenting**

**Obviousness Type Double Patenting**

Claims 1, 4-14 and 16-36 continue to stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as allegedly being unpatentable over Claims 1-9, 11-14 and 16-34 of co-pending U.S. Patent Application No. 10/094,816 in view of Attarwala for the reasons given at pages 9-10 of the Action;

Claims 1, 4-14 and 16-36 continue to stand rejected under the judicially created doctrine of obviousness-type double patenting as allegedly being unpatentable over

-- Claims 1-20 of U.S. Patent No. 5,922,783 in view of Attarwala for the reasons given at pages 11 and 12 of the Action;

-- Claims 1-20 of U.S. Patent No. 5,922,783 in

view of Attarwala, and further in view of Mikune for the reasons given at pages 11 and 12 of the Action; and

Claims 26-26 and 30-32 stand rejected under the judicially created doctrine of obviousness-type double patenting as allegedly being unpatentable over Claims 1-20 of U.S. Patent No. 5,922,783 in view of Attarwala, and further in view of Coover for the reasons given at page 11 of the Action.

Applicants continue to traverse each of these double patenting rejections.

Nevertheless, in view of Applicants desire to advance prosecution on the merits but without conceding the propriety of the bases for these double patenting rejections, Applicants are prepared to submit a Terminal Disclaimer to remove co-pending U.S. Patent Application No. 10/094,816 and the '783 patent from the rejections set forth above.

Accordingly, upon submission of such terminal disclaimer the obviousness type double patenting rejections should no longer be maintained and withdrawal thereof is respectfully requested. Applicants respectfully request again express acknowledgement by the Examiner in the next written communication that such submission would remove the obviousness type double patenting rejections.

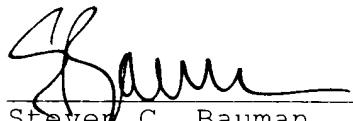
CONCLUSION

In view of the above, favorable reconsideration and passage to issue of the present case are respectfully requested.

The present paper is an earnest attempt at advancing prosecution on the merits, acceptance of which is believed to place the application in condition for allowance. Applicants therefore respectfully request approval and entry of this paper, which is believed proper.

Applicants' undersigned attorney may be reached by telephone at (860) 571-5001, by facsimile at (860) 571-5028, or by email at steve.bauman@loctite.com. All correspondence should continue to be directed to the address given below.

Respectfully submitted,

  
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